

## ABSTRACT OF THE DISCLOSURE

One embodiment includes non-catalytically forming a nanowire on a substrate from  
5 an organometallic vapor without application of any type of reduction agent. The  
nanowire is grown during this formation in a direction away from the substrate and is  
freestanding during growth. The nanowire has a first dimension of 500 nanometers or  
less and a second dimension extending from the substrate to a free end of the nanowire at  
least 10 times greater than the first dimension. In one form, the organometallic vapor  
10 includes copper and the nanowire essentially consists of elemental copper, a copper alloy,  
or oxide of copper. Alternatively or additionally, the nanowire is of a monocrystalline  
structure.